An Exploration of Software Defined Radio and GNU Radio Companion for Use in Drone-to-Drone Communication

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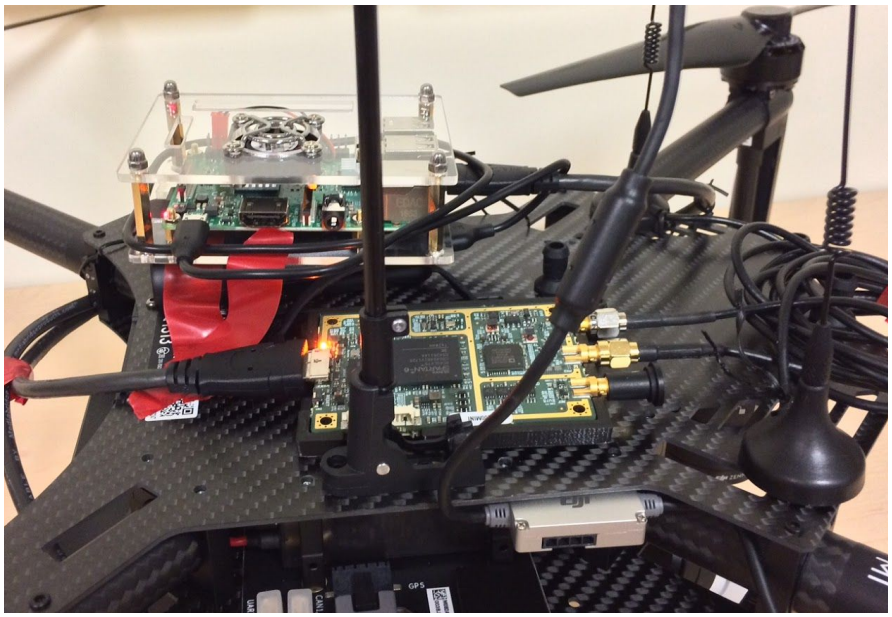
Abstract: In a world that increasingly relies on automation and intelligent robotics, there is a need for drones to expand their independence and adaptability in navigating their environments. One approach to this problem is the use of wireless communication between units in order to coordinate their sensor data and build real-time maps of the environments they are navigating. However, especially indoors, relying on a fixed transmission tower to provide data to the units faces connectivity challenges.

The purpose of this research was to determine the fitness of an on-drone assembly that uses the the NI B200mini software-defined radio board and Gnu Radio Companion (GRC) software in use for drone-to-drone communication. Using a Raspberry Pi computer with a linux-based operating system to link the assembly to a Matrice 100 quadcopter drone, we explore the ability to transmit and receive data packets between drones as a way for them to share the burden of identifying objects in their environment and communicate the location of safe paths of travel using machine learning algorithms.



The Matrice 100 with Raspberry PI and B200mini SDR assembly

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